



6TH ANNUAL
CAPE COASTAL CONFERENCE
DECEMBER 4-5, 2018

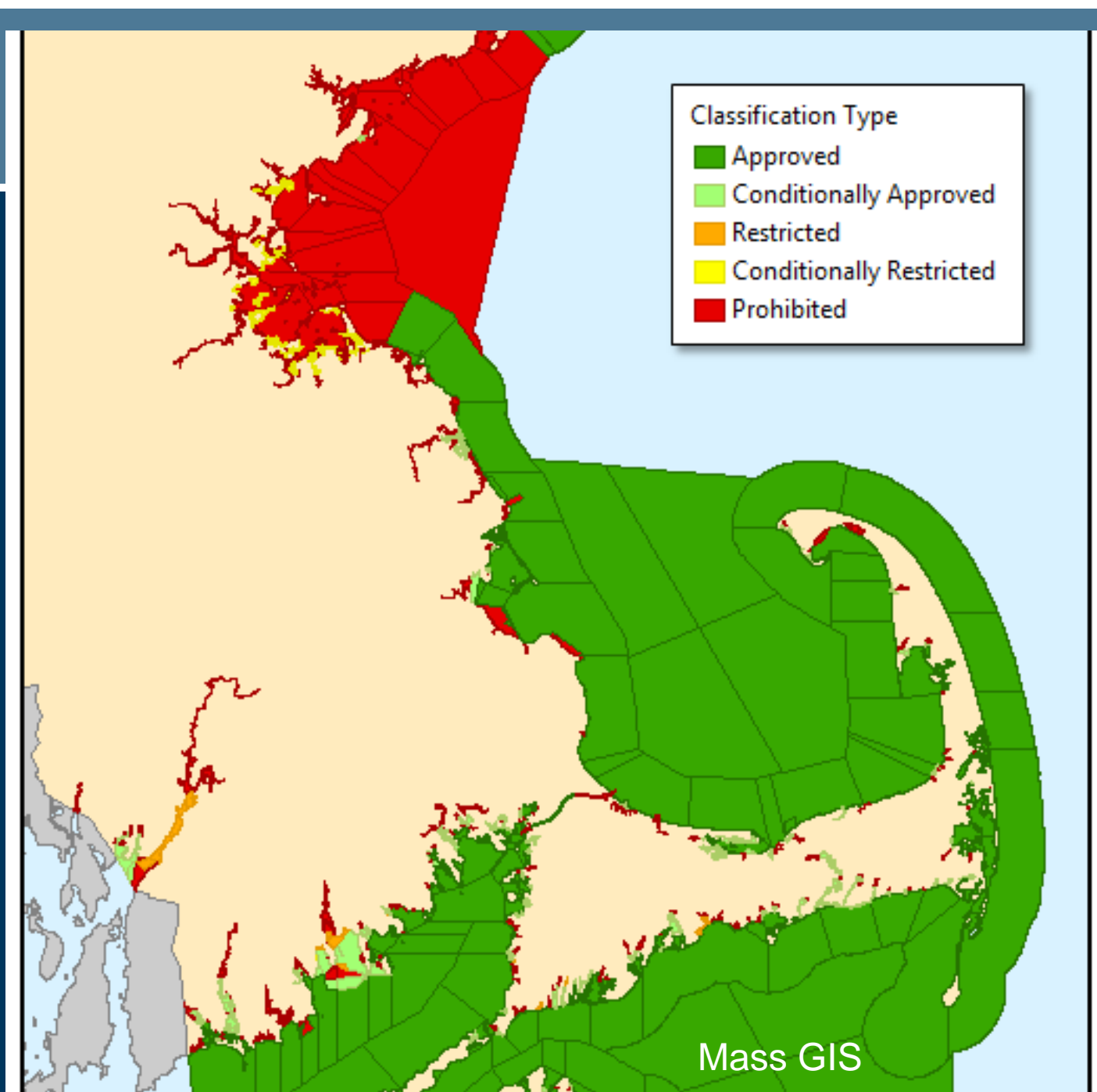


Restoration and Aquaculture: Shellfish Projects on Cape Cod and State-wide

Steve Kirk







Coastal Restoration



Credit Lauren Owens

Coastal Restoration: Habitat



Spat on Shell



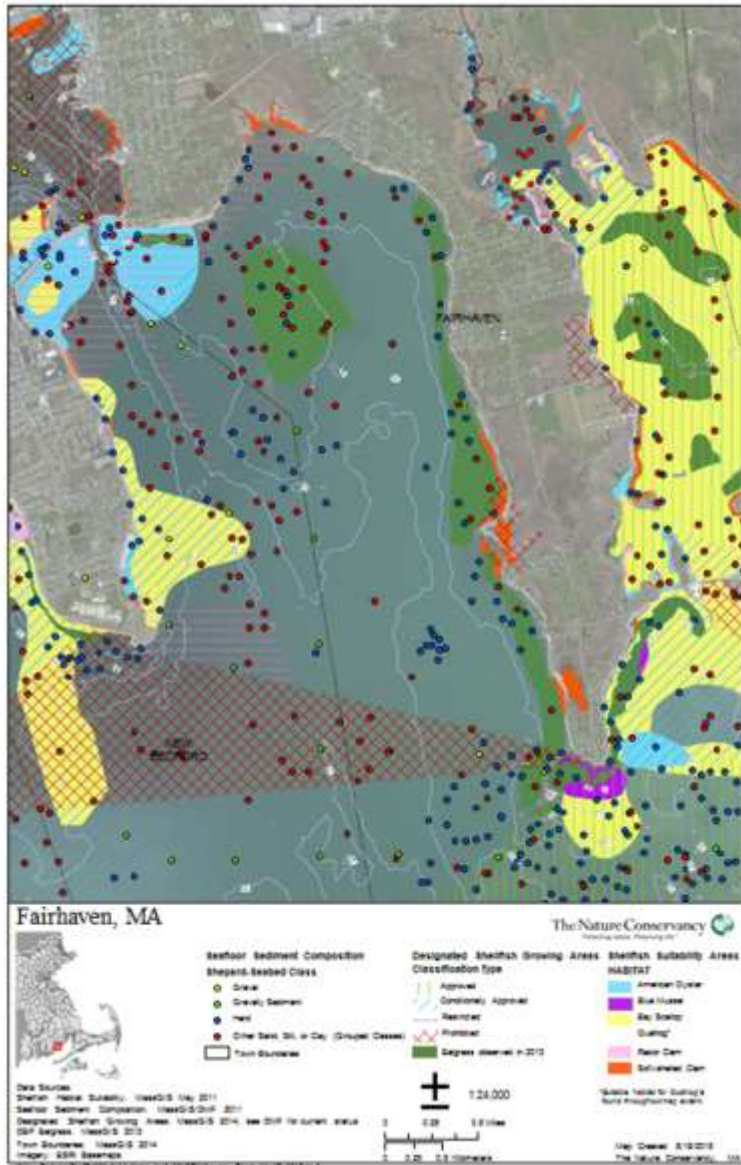
Siting Factors

❖ Feasibility

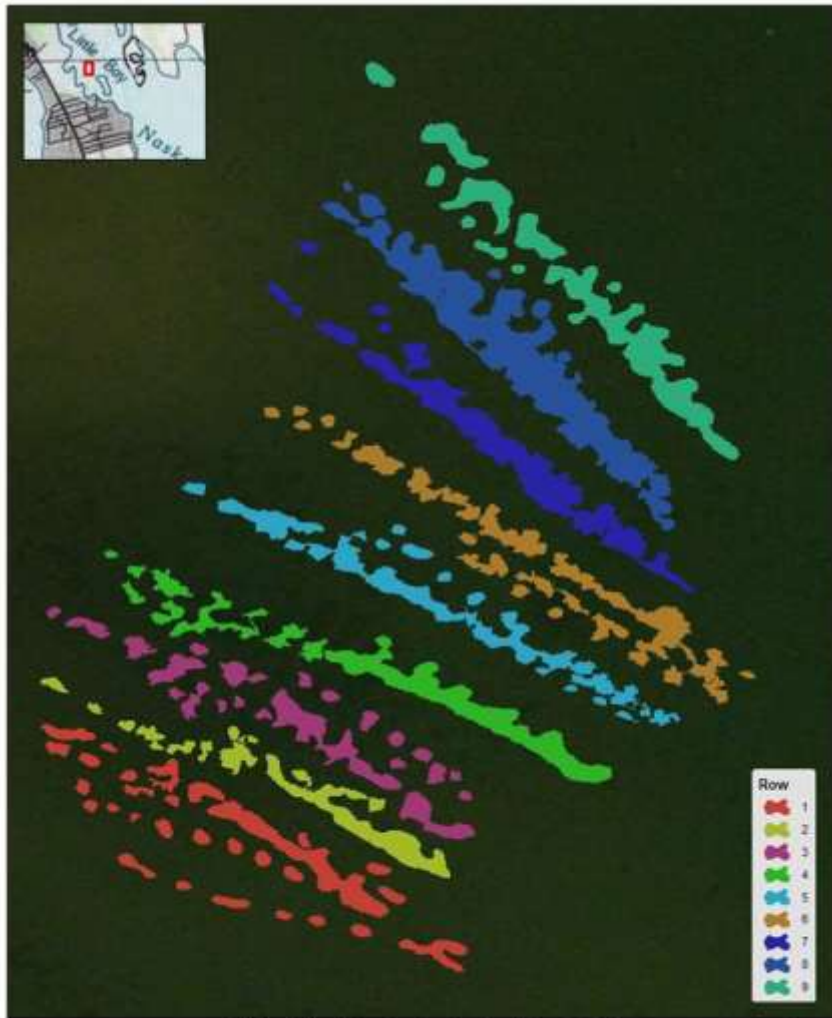
- Regulatory: NSSP, DMF, DEP, ACOE
- Municipal Support

❖ Ecological

- Bottom Characteristic
- Existing population
 - Proxy: Disease, Predation
- Water Chemistry and Quality
- Depth



Monitoring

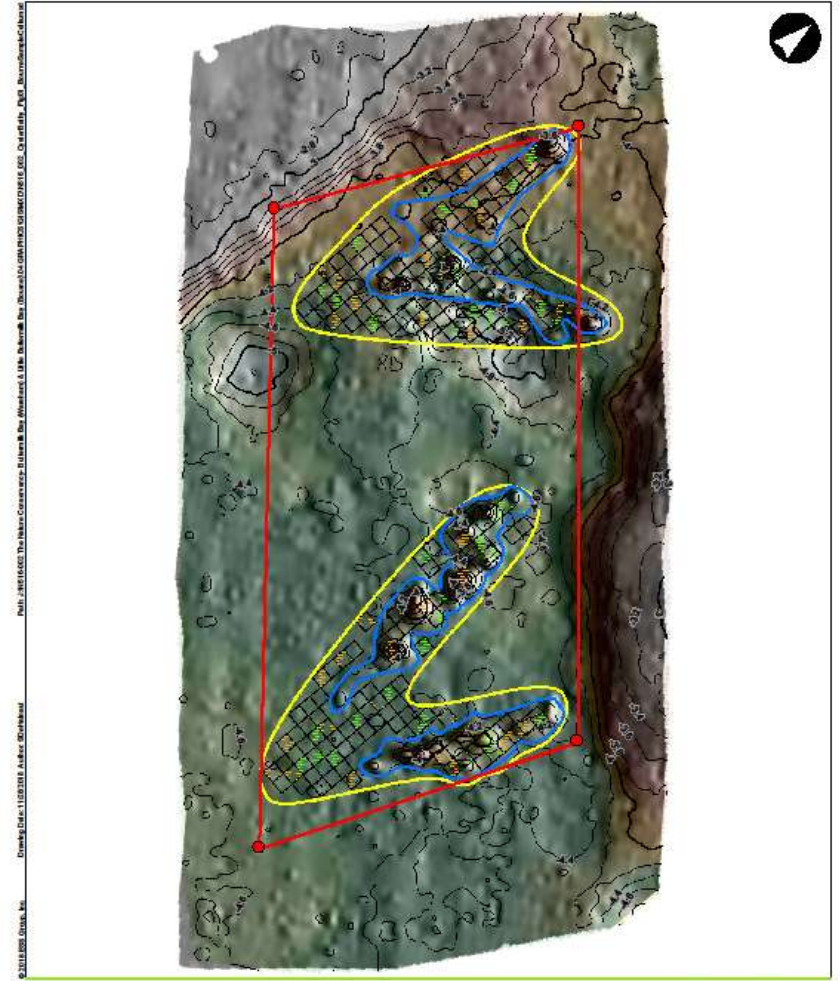


COASTAL
Monitoring Bathymetry

Datum: WGS 1984
1650

Nasketucket Bay Oyster Restoration Project Reef Perimeter

Total Reef area: 0.5 acres.
Reef boundary accurate to 0.5 meters. Data collected 10/2015.



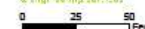
ess
group
environmental
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group

Buttermilk Bay Oyster Restoration Bourne, MA

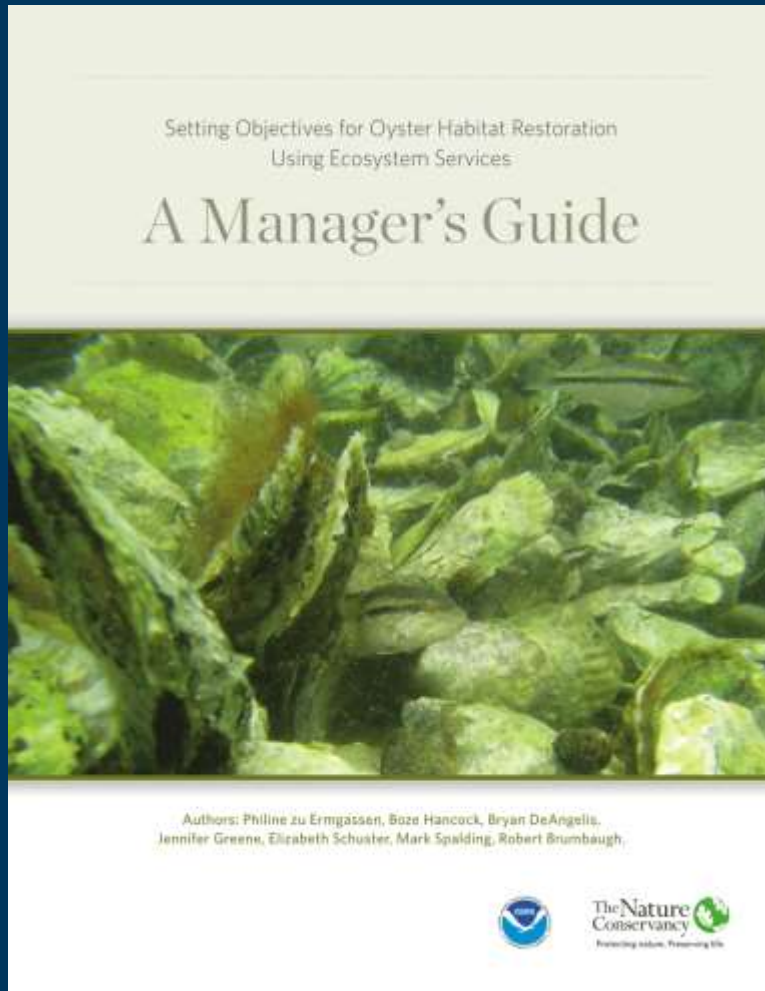
Source: 1) OR Environmental,
Bathymetry Data, 2015
© 2015 OR Environmental

Elevation in NAVD83 feet

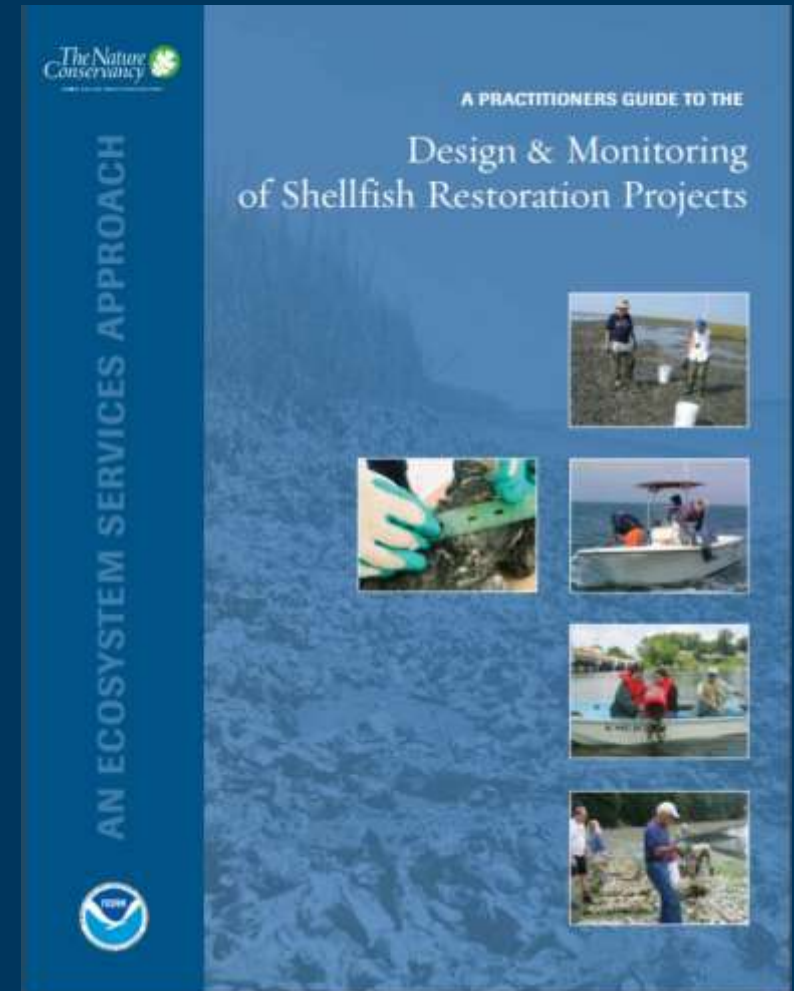
- Bathymetry Elevation Index Contour (1 Ft Interval)
- Bathymetry Elevation Detail Contour (0.2 Ft Interval)
- Approximate Oyster Reef Limits
- Permit Footprint
- Approximate Elevated Reef Limits
- 2m x 2m Grid
- Primary Cell
- Alternate Cell



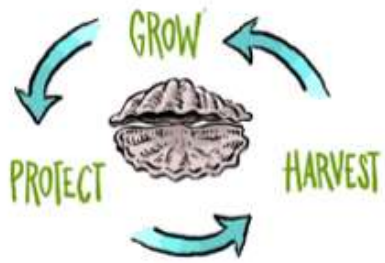
Sampling Grid Layout



[Link](#)



[Link](#)



MASSACHUSETTS SHELLFISH INITIATIVE

Maximize the economic, environmental, and social benefits of Massachusetts' shellfish resources

Jobs
Working waterfronts

Ecosystem Function
Water Quality
Habitat
Shoreline Stabilization

Sustainable seafood

Aquaculture – Restoration – Wild Harvest

Global Aquaculture Vision

GLOBAL AQUACULTURE

Our vision is for aquaculture to significantly contribute to the restoration of coastal ecosystems, while supporting livelihoods and producing sustainable seafood.



Fish Production



Gear and Fish



[VIDEO LINK](#)

Impact Investing for NBS on Cape Cod – Potential for Sustainable Aquaculture

Cape Cod Context

- Municipalities have created alternative watershed plans to achieve nitrogen reduction – ***shellfish aquaculture is one of the most frequently selected technologies***

Shellfish Nitrogen Removal Credits

- Nitrogen reduction based on tissue accumulation

Potential Investment Frameworks

- **TBD** - Nitrogen market; Pay for success model

Potential Grower Incentives

- Compensation for effort in monitoring
- Portion of revenue redirected towards improving restorative aquaculture practices

Project Goals

- Increase the pace and scale of nitrogen removal to meet TMDLs – support ecosystem recovery
- Create framework to replicate across Cape Cod and beyond



Photo Credit: Town of Barnstable DPW

06/2

Thanks

<http://www.nature.org/aquaculture>

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The Nature
Conservancy 
AQUACULTURE BY DESIGN